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EXAMINER	
WASHINGTON, JAMARES	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/783,370	TOUURA, KOUSUKE	
	Examiner	**Art Unit**	
	JAMARES WASHINGTON	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 August 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-14,22 and 24-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-14,22 and 24-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *08/25/2008*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submissions filed July 24, 2008 and August 25, 2008 have been entered.

Response to Amendment

Amendments and response received July 24, 2008 and August 25, 2008 have been entered as stated above. Claims 1, 3-14, 22, and 24-35 are currently pending. Claims 2, 15-21, 23 and 36-39 have been cancelled. Amendments and response are addressed hereinbelow.

Claim Objections

2. Claim 3 is objected to because of the following informalities:

"A image forming apparatus" in line 1 should read "An image forming apparatus...". Appropriate correction is required.

Double Patenting

3. Applicant is advised that should claims 1, 3, 22, and 24 be found allowable, claims 13, 14, 34 and 35 will be objected to under 37 CFR 1.75 as being substantial duplicates thereof, respectively. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3-9, 11-14, 22, 24-30, 32, 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katsuyuki Hirata et al (US 6462838 B1) in view of Masaki Tanaka et al (US 5754920) and Ryo Ando et al (US 5600404).

Regarding claim 1, Hirata et al discloses an image forming apparatus (Fig. 1 numeral 1 copying machine) comprising:

an image-forming unit (Fig. 1 numeral 30 electrographic printer) for forming a correcting image for correcting gradations of an output image (Fig. 12 numeral 90 AIDC test patterns. "... the AIDC patterns are measured so that the result of measurement may be reflected in the correspondence between 256 gradation levels of the input to the gradation reproduction circuit 50 and 8 gradation levels of the output therefrom and thereby the density type gradation reproduction for C, M, Y and K may be kept constant" at column 12 line 13), on a bearing body (Fig. 12 numeral 34 belt);

a sensor (Fig. 12 numeral 37 AIDC sensors) for measuring reflected light quantity of the correcting image formed on the bearing body ("The AIDC sensors 37 are photosensors for detecting the image densities of the AIDC patterns (FIG. 12) corresponding to test patterns" at column 5 line 17);

a gradation correcting unit for correcting the gradations of the output image (Fig. 7 numeral 50 Gradation reproduction circuit), based on a measurement result of the measured reflected light quantity of the correcting image ("The provision of the AIDC patterns serves to make the gradation reproduction of an image uniform all over even if the internal environment of the copying machine 1 is made uneven" at column 12 line 25); and

the correcting image comprises a gradation pattern comprising a plurality of gradations (Fig. 12 numeral 90 AIDC patterns);

the sensor measures the reflected light quantity of the correcting image at a fixed interval timing (Fig. 12 numeral 37 AIDC sensor performing measurements of the test patterns. "The aforesaid six AIDC patterns 90 of which each file consists are prepared

over again on the basis of new specific gradation levels of an input image data, and the image densities of these six AIDC patterns 90 are measured" at column 13 line 52).

Hirata et al fails to disclose or fairly suggest a timing correcting unit for detecting a shift of measurement timing based on the measurement result by the sensor and for correcting the detected shift of the measurement timing, wherein the timing correcting unit detects a shift between a specified timing prescribed in advance as a timing at which a measurement of a head part of the gradation pattern is started, and a timing at which a measured value having a largest change of measured light quantity value between two adjacent sampling points in a vicinity of the specified timing is measured, as the shift of the measurement timing, based on the measured values measured at the fixed interval timing.

Tanaka et al, in the same field of endeavor, teaches a timing correcting unit (Col. 1 line 65-Col. 2 line 3) for detecting a shift of measurement timing (Col. 1 lines 65-66), based on the measurement result by the sensor (Col. 1 line 66-Col 2. line 1), and for correcting the detected shift of the measurement timing (Col. 2 lines 1-3), wherein the timing correcting unit detects a shift between a specified timing prescribed in advance as a timing at which a measurement of a head part of the gradation pattern is started (Fig. 9b element A7), and a timing at which a measured value having a largest change of measured light quantity value between two adjacent sampling points in a vicinity of the specified timing is measured (Fig. 9 sample point A10) as the shift of the measurement timing (Col. 9 lines 29-31 wherein the shift is calculated to be 75 msec), based on the measured values measured at the fixed interval timing (based on values

measured within the 250 msec as indicated by Fig. 9b). *Note the output of the AIDC sensors shown on the y-axis indicates the amount of toner sensed by the sensor from the patterns. The sharp increase in slope shown on the graph indicates the “largest change of measured light" between the two adjacent sampling points which alerts the user that the detection is not aligned with the gradation patterns detected by the sensor. Although the sampling points (A7 and A10) are not adjacent, one of ordinary skill in the art at the time the invention was made could have easily adapted the sampling point times to be adjacent sampling points with the values of A8 and A9 being that of “interpolated” intermediate data points. What a reference teaches or suggests must be examined in the context of the knowledge, skill, and reasoning ability of a skilled artisan. What a reference teaches a person of ordinary skill is not, limited to what a reference specifically "talks about" or what is specifically "mentioned" or “written” in the reference.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the sensor for measuring reflected light quantity of a correcting image as disclosed by Hirata et al to utilize the timing correcting unit for detecting a shift of measurement timing as taught by Tanaka et al because "the characteristic value of the object of [detection] cannot be detected with precision when the detection timing of the sensor detecting a standard pattern formed on the surface of a photosensitive member lags (Tanaka et al, Col. 1 lines 35-39).

Hirata et al fails to disclose or fairly suggest wherein the gradation correcting unit corrects the gradations of the output image using the measurement result which is measured at the timing corrected by the timing correcting unit.

However, Hirata et al wherein the gradation correcting unit corrects the gradations of the output image in view of Tanaka et al wherein the sensor is equipped with a timing correcting unit to detect and correct a shift of measurement timing would have been obvious to a person of ordinary skill in the art at the time the invention was made to simply substitute the sensor as disclosed by Hirata et al with the sensor of Tanaka et al because the substituted sensor is known in the art and the results of the substitution would have been predictable. Tanaka et al teaches correcting the gradations of the output image using the measurement result (Col. 2 lines 21-26), therefore it would be obvious for the invention disclosed by Hirata et al to employ the same gradation corrections based on the findings and/or correction of the sensor timing taught by Tanaka et al.

Hirata et al does not disclose or suggests the timing correcting unit detects a shift between a specified timing prescribed in advance as a timing at which a measurement of a head part of the gradation pattern is started.

Ando et al, in the same field of endeavor, teaches the shift between specified timing prescribed in advance as the timing at which a measurement of a head part of the gradation pattern is started ("...a specific pattern image of a single color is selected as the reference (i.e., a reference pattern image)" at column 3 line 41. Ando).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the image forming apparatus as disclosed by Hirata et al to incorporate the teachings of Ando et al where the timing shift is measured from one gradation patch to the next which would constitute the "head part" of the gradation

pattern to introduce the largest change of the measured light quantity value in a vicinity of the specified timing because it would provide distinguishable reference points for measurements where the transition to the next measurement reading would not be misconstrued for the previous gradation patch readings.

Regarding claim 3, Hirata et al discloses an image forming apparatus (see rejection of claim 1) comprising:

an image forming unit for forming a correcting image for correcting gradations of an output image, on a bearing body (see rejection of claim 1);

a sensor for measuring a reflected light quantity of the correcting image formed on the bearing body (see rejection of claim 1);

a gradation correcting unit for correcting the gradations of the output image, based on a measurement result of the measured reflected light quantity of the correcting image (see rejection of claim 1); and

a timing correcting unit for detecting a shift of measurement timing at which the correcting image is measured by the sensor, based on the measurement result by the sensor, and for correcting the detected shift of the measurement timing (see rejection of claim 1),

wherein:

the gradation correcting unit corrects the gradations of the output image using the measurement result which is measured at the timing corrected by the timing correcting unit (see rejection of claim 1),

the correcting image comprises a gradation pattern comprising a plurality of gradations (see rejection of claim 1);

the sensor measures the reflected light quantity of the correcting image at a fixed interval timing (see rejection of claim 1); and

the timing correcting unit detects a shift between a specified timing prescribed in advance as a timing at which a measurement of a head part of the gradation pattern is started (see rejection of claim 1), and a timing at which a measured value in a vicinity of the specified timing is measured, as the shift of the measurement timing, based on the measured values measured at the fixed interval timing (see rejection of claim 1).

Hirata et al fails to expressly disclose wherein a timing at which a measured value near to an intermediate light quantity value of measured values determines the shift in measurement timing.

Tanaka et al, in the same field of endeavor, teaches an intermediate light quantity value of measured values (Example: Fig. 9b value A8 being an intermediate light quantity value).

The use of the intermediate light quantity value rather than the greatest light quantity change within a vicinity of specified timing would have been a predictable modification because the sensor detecting a value closest to the intermediate light quantity value would provide more accurate results as data which would be left out when using the greatest change in light quantity would provide more accurate results. The intermediate light value would alert the user to data detected which would be ignored under previous circumstances but would provide more accurate timing results.

A person of ordinary skill in the art would have recognized the advantages that the improvement would make for the known device.

Regarding claim 4, Hirata et al discloses the image forming apparatus as rejected in claim 1 above, wherein:

the timing correcting unit corrects the measurement timing of the sensor by the shift quantity of the detected measurement timing (see rejection of claim 1 wherein the "correction means" taught by Tanaka et al "eliminates the timing lag when a timing lag is determined by said determination means at Col. 2 lines 1-3)

Regarding claim 5, Hirata et al discloses the image forming apparatus as rejected in claim 1 above, wherein:

the timing correcting unit corrects the shift of the measurement timing by selecting the measured value to be applied as an output density value of each gradation in the gradation pattern among the respective measured values measured by the sensor according to the detected shift quantity of the measurement timing (see rejection of claim l wherein sampling of a subsequent sampling cycle is thereby conducted based on a corrected timing and a controller controls an image forming operation in accordance with the sampling values after a sampling means for sampling density values at a plurality of sampling points on a standard pattern image formed on said photosensitive member by operating said sensor with a timing at which said sensor confronts said standard pattern image is implemented); and

the gradation correcting unit (Fig. 7 numeral 50) performs the gradation correction based on the measured value selected as the output density value of each gradation (Col. 12, lines 19- 30; also see rejection of claim 1 wherein the sensor of Tanaka is substituted into the invention disclosed by Hirata).

Regarding claim 6, Hirata et al discloses the image forming apparatus as rejected in claim 1 above, wherein:

the correcting image comprises a gradation pattern comprising a plurality of gradations (Col. 12, lines 38-40); and

the timing correcting unit detects the respective shift of the measurement timing from the plurality of gradation patterns (see rejection of claim 5), and performs the correction of the measurement timing by applying the shift quantities of the measurement timing (see rejection of claim 1 wherein the "correction means" taught by Tanaka et al "eliminates the timing lag when a timing lag is determined by said determination means at Col. 2 lines 1-3, Tanaka et al), which are detected in the respective gradation patterns (Fig. 12 numeral 90 AIDC patterns), to each of the gradation patterns ("... each AIDC sensor 37 may be allowed to detect the image densities of six AIDC patterns 90 one after another" column 12 line 45. Therefore, correction must be preformed for each gradation pattern).

Regarding claim 7, Hirata et al discloses the image forming apparatus as rejected in claim 1 above, wherein:

the correcting image comprises a gradation pattern comprising a plurality of gradations (Col. 12, lines 38-40); and

the timing correcting unit detects the respective shift of the measurement timing from the plurality of gradation patterns (see rejection of claim 5), and corrects the shift of the measurement timing by applying an average value of the shift quantities (see rejection of claim 1 wherein Tanaka teaches correction of the shift of measurement timing; Col. 7 lines 50-52 Tanaka explains the determination of the shift is made based on the average value of output of AIDC sensor), which are detected in the respective gradation patterns, to all of the gradation patterns ("...each AIDC sensor 37 may be allowed to detect the image densities of six AIDC patterns 90 one after another" column 12 line 45. Therefore, correction must be preformed for each gradation pattern), as a common shift quantity.

Regarding claim 8, Hirata et al discloses the image forming apparatus as rejected in claim 6 above, wherein:

the plurality of gradation patterns are identical (Col. 12 lines 57-61. Each color (C, M, Y, K) is represented by the same set of gradation values as described in the aforementioned paragraph. The 8 sets of values ranging from 0-224, excluding 0 and 224.)

Regarding claim 9, Hirata et al discloses the image forming apparatus as rejected in claim 6 above, wherein:

the plurality of gradation patterns are different from one another (Col. 12, lines 38-40).

Regarding claim 11, Hirata et al discloses the image forming apparatus as rejected in claim 1 above, wherein:

the correcting image comprises a plurality of colors (AIDC patterns are gradation levels of input image data. Gradation levels are gradual changes from one color to another.);

the gradation correcting unit (Fig. 7 numeral 50 Gradation reproduction circuit) performs the gradation correction of each color based on the measured value of the reflected light quantity of the correcting image comprising the plurality of colors ("The provision of the AIDC patterns serves to make the gradation reproduction of an image uniform all over even if the internal environment of the copying machine 1 is made uneven" at column 12 line 25); and

the timing correcting unit corrects the shift of the measurement timing (see rejection of claim 1) at every measurement of the reflected light quantity of the correcting image of each color (see rejection of claim 1 regarding the AIDC patterns for each color).

Regarding claim 12, Hirata et al discloses the image forming apparatus as rejected in claim 1 above, wherein:

the bearing body is a transfer member (Fig. 1 numeral 34 transfer belt); and

the sensor measures the reflected light quantity of the correcting image formed on the transfer member (Col. 12 lines 10-19).

Regarding claim 13, Hirata et al discloses an image forming apparatus as rejected in claim 1 above, wherein the gradation correction unit (Fig. 7 numeral 50 Gradation reproduction circuit) corrects the gradations of the output image using the measurement result which is measured at the timing corrected by the timing correcting unit ("The provision of the AIDC patterns serves to make the gradation reproduction of an image uniform all over even if the internal environment of the copying machine 1 is made uneven" at column 12 line 25"). *See rejection of claim 1*

Regarding claim 14, Hirata et al discloses the apparatus as rejected in claim 3 above.

Regarding claim 22, Hirata et al discloses the gradation correction method performed by the apparatus as rejected in claim 13 above.

Regarding claim 24, Hirata et al discloses the method performed by the apparatus as rejected in claim 3 above.

Regarding claim 25, Hirata et al discloses the method performed by the apparatus as rejected in claim 4 above.

Regarding claim 26, Hirata et al discloses the method performed by the apparatus as rejected in claim 5 above.

Regarding claim 27, Hirata et al discloses the method performed by the apparatus as rejected in claim 6 above.

Regarding claim 28, Hirata et al discloses the method performed by the apparatus as rejected in claim 7 above.

Regarding claim 29, Hirata et al discloses the method performed by the apparatus as rejected in claim 8 above.

Regarding claim 30, Hirata et al discloses the method performed by the apparatus as rejected in claim 9 above.

Regarding claim 32, Hirata et al discloses the method performed by the apparatus as rejected in claim 11 above.

Regarding claim 33, Hirata et al discloses the method performed by the apparatus as rejected in claim 12 above.

Regarding claim 34, Hirata et al discloses the method performed by the apparatus as rejected in claim 13 above.

Regarding claim 35, Hirata et al discloses the method performed by the apparatus as rejected in claim 14 above.

4. Claims 10 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirata et al, Tanaka et al, and Ando et al as applied to claims 1 and 22 above, and further in view of Yoichiro Maebashi et al (US 6898381 B2).

Regarding claim 10, Hirata et al of the Hirata-Ando combination discloses the image forming apparatus as rejected in claim 2 above.

Hirata fails to disclose or suggest wherein each gradation of the gradation pattern is formed in order that the measurement by the sensor is performed in an order from a high density gradation to a low density gradation.

Maebashi et al, in the same field of endeavor, teaches each gradation of the gradation pattern is formed in order that a measurement by the sensor is performed in an order from a high density gradation to a low density gradation ("... whereby the density of the toner patch 64 from high to low densities can be detected..." Col. 5 lines 48-53, Maebashi).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate into the image forming apparatus as disclosed by

Hirata the teachings of Maebashi where the gradation patterns are formed in order that a measurement by the sensor is performed in an order from a high density gradation to a low density gradation because it would provide distinguishable reference points for measurements where the transition to the next measurement reading would not be misconstrued for the previous gradation patch readings.

Regarding claim 31, Hirata et al of the Hirata-Ando combination discloses the method as rejected in claim 23 above.

Hirata fails to Hirata fails to disclose or suggest wherein each gradation of the gradation pattern is formed in order that the measurement by the sensor is performed in an order from a high density gradation to a low density gradation.

Regarding these limitations, please see rejection of claim 10 above.

Response to Arguments

5. Applicant's arguments filed August 25, 2008 have been fully considered but they are not persuasive.

Applicant's remarks: Tanaka et al does not disclose or suggest detecting a timing at which a measured value having a largest change of measured light quantity value between two adjacent sampling points in a vicinity of the specified timing is measured.

Examiner's response: Tanaka et al shows detecting a timing at which a measured value having a largest change of measured light quantity value (Fig. 9b; also see rejection of claim 1) between two adjacent sampling points (see rejection of claim 1 above).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMARES WASHINGTON whose telephone number is (571) 270-1585. The examiner can normally be reached on Monday thru Friday: 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on (571) 272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/King Y. Poon/

Supervisory Patent Examiner, Art Unit 2625

/J. W./
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/Jamares Washington/
Examiner, Art Unit 2625

November 17, 2008